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AUTHOR Fritz, Robert L.
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ABSTRACT

A study examined the association between field-dependence and its related information processing characteristics, and educational cognitive style as a model of conative influence. Data were collected from 145 secondary marketing education students in nothern Georgia during spring 1991. Descriptive statistics, Pearson product moment correlations, and t-tests were used to analyze data. Students completed the Educational Style Preference Inventory, adapted from the original model. The inventory was assessed with a five-point scale. Students also completed the Group Embedded Figures Test, which is an an acceptable measure of field-dependence cognitive style. Findings indicated that the field-dependent style differed from the field-independent cognitive style with reference to four conative attributes: reading numbers, positive communications, peer input, and knowing the rules that apply to a situation. In each instance, the field-dependent group showed a higher preference for the attribute. Explanations for these differences seemed to correspond to what was known about field-dependence theory. The following conclusions were reached: (1) conation, as a volitional construct, had an influence on the purposes that cause people to strive differently toward educational goals; and (2) implications for reasoning behavior were evident. Additional studies are suggested. (27 references) (YLB)

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THE ASSOCIATION OF SELECTED CONATIVE VARIABLES TO FIELD-DEPENDENCE WITH INFERENCES FOR REASONING CHARACTERISTICS IN MARKETING EDUCATION

Robert L. Fritz
Assistant Professor
The University of Georgia
Athens, Georgia

ABSTRACT

The importance of cognitive ability has influenced educational reform and placed pressure on vocational education programs, including marketing education, to improve students' reasoning skills. Answering this issue requires more than a knowledge of course content. Knowledge of student learning behavior is critical, particularly if learners have problems coping with complex tasks.

While cognitive restructuring skills have an influence on attitudes toward complicated skills, researchers now suggest that conative factors influence these interests. Because their importance has not been established, this study attempted to find out if relationships could be established between field-dependence cognitive style and selected conative attributes.

Findings revealed that the field-dependent cognitive style differed from the field-independent cognitive style with reference to four conative attributes -- reading numbers, positive communications, peer input, and knowing the rules that apply to a situation. In each instance, the field-dependent group showed a higher preference for the attribute. Explanations for these differences seemed to correspond to what is known about field-dependence theory.

It was felt, in sum, that conation, as a volitional construct, had an influence on the purposes that cause people to strive differently toward educational goals, and that implications for reasoning behavior were evident. Additional studies were suggested.

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Introduction

In recent years the study of mental ability has changed as efforts to improve cognitive skills reflect new awareness of its complex nature. Early research on cognition focused on ways individuals understand and attach meaning in specific and general situations (Beyer, 1987). Beginning around 1976, metacognition provided the framework to describe "why children of different ages deal with learning tasks in different ways" (Biehler & Snowman, 1990, p. 389). More recently, conation was added to explain the volition and action components of an attitude (Fishbein, 1967).

Snow and Farr (1987) felt that attention to conation helps end the "convenient fiction that has long separated theories of cognitive and affective behavior, and caused the conative aspects of behavior to be more or less ignored" (p. 1). These distinctions fail to consider how conation can "clarify the interaction of cognitive knowledge, strategy, and skill" (Snow, 1989, p. 10). Yet, Federico (1987) contended that "There has been very little agreement regarding the nature of the interaction or integration of these (conative and cognitive) psychological processes" (p. 118).

Their relationship, however, was suggested by prominent educational theorists. Bloom (1984), felt that cognitive transfer is affected by the use of effective problem solving methods and "proper attitudes toward work . . . self-confidence and control" (p. 122). and Tyler (1980) observed that basic attitudes and habits are difficult to change, even under direct attention. Both see mental skill as an interactive process.

A current challenge is to "find ways to examine and incorporate conative and affective phenomena within expanded cognitive processing models" (Snow & Farr, 1987, p. 7). Because effective workplace behavior involves appropriate cognitive and conative variables, this broader approach to cognitive skill development has important implications for marketing education.

Background

Conation

Conation or conative variables are "motivational and volitional constructs were defined by Snow and Farr (1987):

> Conation -- . . . A *conscious* tendency to act; a conscious striving . . . It is now seldom used as a specific form of behavior, rather for an aspect found in all. Impulse, desire, volition, purposive striving all emphasize the conative aspect (p. 4)

Because it is not clear how conation fits into information processing models (Snow & Farr, 1987, p. 6), "construct validation research is needed to . . . place (conative and cognitive variables) in a reasonable and useful network" (Snow & Farr, 1987, p. 8).

There appears to be vocational reasons for attending to this issue. One is to promote the deep understanding, higher order skill and achievement motivation that conation influences as students generate solutions, assemble skilled performances, or do "problem solving and problem finding" (Snow, 1989, p. 13). Another is to diagnose student weaknesses that relate to the "degree and kind of help they need to do these things" (p. 13).

By developing formal measurement procedures, educators can "produce a richer and more integrated description of cognitive and conative aspects of personal knowledge growth" (Snow, 1989, p. 13). Thus, construct validation research should "distill the present array (of variables) into a more coherent and parsimonious system of distinguishable, understandable, and measurable constructs" (pp. 13 - 14). Thomas and Englund (1989) do not believe that these relationships are necessarily direct or even obvious.

A complicating element is that "important aspects of learning are personalized and idiosyncratic" (Snow, 1989, p. 11). Lazarus (1982) concluded that "Concern for individual differences leads inevitably to concern with personal meanings and to the factors that shape such meanings . . . to our own requirements" showing that "Information processing as an

exclusive model of cognition is insufficiently concerned with the person as a source of meaning (p. 1020). Thus, knowing how volition and behavioral intention affect cognitive skills can address a diagnostic need in education.

The importance of these factors is revealed by Bloom (1984) and he beliefs that higher-order cognitive objectives require a high degree of consciousness about the task and procedures to use to complete it. He also felt that the use of guided practice would help students acquire the skills they need to become proficient at the restructuring of knowledge.

Cognitive style

While conation helps "clarify the interaction of cognitive knowledge, strategy, and skill" (Snow, 1989, p. 10), cognitive styles address the information processing component. They are concerned with "how" tasks are performed rather than with competence in performing them (Biehler & Snowman, 1990; Pizzamiglio & Zoccolotti, 1986). They may act as a "bridging variable between cognition and personality and between structure and process" and include pervasive characteristics (Messik, 1987). Among cognitive style theories, field-dependence is frequently cited in psychological literature (Wapner, 1986).

The specific pervasive characteristics of field-dependence have been related to occupational preference, problem solving behavior in new task situations, and a general orientation toward external and internal environments (Messik, 1987; Goodenough, 1986; Korchin, 1986; Pizzamiglio & Zoccolotti, 1986; Witkin, Goodenough, & Oltman, 1979; Witkin, Moore, Goodenough, & Cox, 1977; Witkin, Moore, Oltman, Goodenough, Friedman, Owen, & Raskin, 1977).

Field-dependence is described with a bi-polar model. A social end is called field-dependent and is defined as the use of an external frame of reference. The other end, called field-independence, is analytical represents an internal frame of reference. These two extreme groups represent the upper and lower twenty-seven percent of the distribution of scores, while

those in the middle (the other 46%) are considered mixed and are normally not included in data analysis.

Extreme group membership can be determined several ways, including with the embedded figures test. Those with a field-dependent style have trouble finding embedded forms -- they can not overcome the context to find the simple form; field-independence includes overcoming the effects of the context to find the simple form (Bertini, Pizzamiglio, & Wapner, 1986).

Beginning in adolescence, sex differences have been reported, with females being more often field-dependent than males, (Bertini, Pizzamiglio, & Wapner, 1986; Witkin & Goodenough, 1981; Witkin, Moore, Goodenough, & Cox, 1977). Witkin felt that "socialization plays an important role in the development of sex differences" (Witkin & Goodenough, 1981, p. 89). Thus, the field-dependent cognitive style may reflect "child-rearing practices that encourage continued reliance on parental authority" and "less differentiation" of the self from others (p.82).

Importantly, "family environments which encourage separate functioning in children are likely to produce children who develop in the direction of greater field independence" (Witkin & Goodenough, 1981, p.89). This implies that decision rules are habituated that have an impact on the development and organization of cognitive skills. This almost certainly suggests that conative factors have volitional influence on cognitive performance.

A direct consequence of personal development can be tied to a variety of behaviors. For example, field-dependent learners have less cognitive restructuring interest and less toleration for ambiguity in a task setting, particularly if the situation is new (Witkin & Goodenough, 1981). They prefer to learn social information and, compared to the field-independent style, more often shift opinions in an argument, thus showing their tendency to rely on others to form decisions, while the field-independent learner tends to follow

structures" (p. 60). He felt that "stable and pervasive learning styles are habitual and ingrained generalized learning strategies that cut across diverse learning situations" (p. 60) and that "learning styles develop gradually and experientially around underlying personality trends" (p. 67).

The framework developed by Hill (1981), called "educational cognitive style" is organized around social and psychological theories that fit Messik's (1987) description. It has three major components -- symbols and the cultural does that influence their meaning, cultural determinants, and modes of inference. Twenty-eight sub-tests are inventoried through a self-report, personal preference format that produces a profile that shows how students attribute meaning to educational situations and educational tasks. The first category, Symbols and the Cultural Codes that influence their Meaning, shows the value that individuals attach to the meanings derived from words and numbers. Cultural codes are influences on the way symbols are used in a particular context. The second category, Cultural Determinants, shows social influence on decision making and the roles ascribed to reference groups by an individual. Finally, the third category, Modes of Inference, describes inductive and deductive reasoning processes that are used to understand an experience. (Hill, 1981)

Hill's approach seems to measure volitional influences because orientation toward symbols, for example, could rest on nurturing experience and the impact of one's environment. The use of cultural determinants could reflect a similar outlook, while modes of inference appear to involve patterns aligned with field-dependence theory. Thus, educational cognitive style theory could serve as a bridge to cognitive style and mental behavior as Messik (1987) suggests. This model also reflects a "personalized and idiosyncratic" approach to educational meaning. An unanswered question, however, is the measured relationship that may exist between Educational Cognitive Style, as a theory of learning style, and field-dependence, as a theory of information processing.

Objectives

To determine if field-dependence, and its related information processing characteristics, and Educational Cognitive Style, as a model of conative influence, are associated, the investigator addressed the following objectives to learn if

1. the total sample and the extreme groups (field-dependent and field-independent) reflect the sex differences associated with field-dependence theory.
2. there are statistically significant differences in Symbolic Orientation sub-tests based on Group Embedded Figures Test extreme group membership.
3. there are statistically significant differences in Sensory and Cultural Code sub-tests based on Group Embedded Figures Test extreme group membership.
4. there are statistically significant differences in Cultural Determinant sub-tests based on Group Embedded Figures Test extreme group membership.
5. there are statistically significant differences in Reasoning Strategy sub-tests based on Group Embedded Figures Test extreme group membership.

Population, Methods and Procedures

Data was collected from 145 secondary marketing education students in northern Georgia during the spring of 1991 and processed through The University of Georgia Educational Research Services Laboratory. Descriptive statistics, Pearson product moment correlations and *t*-Tests were used to analyze the data reported in this paper.

Reliability was established for the twenty Educational Style sub-tests used in this study. Cronbach's alpha estimates "internal consistency" (Crocker & Algina, 1986, p. 138 - 139). This reliability represents the average correlation of items within a test and is an acceptable method of estimating internal consistency for scores obtained from a single test administration (Crocker & Algina, 1986, p. 117).

Cronbach's Alpha reliability coefficients for the twenty sub-tests range from .4569 to .8481 (see Appendix A). After initial reliability was calculated, items that substantially reduced sub-test reliability were deleted. Thus, reliabilities in Appendix A reflect adjusted values. Subsequent data analysis was completed with these adjusted reliabilities for the sub-tests.

The students were given instructions and completed the "Educational Style Preference Inventory" adapted by the investigator from the original model developed by Hill (1981). The inventory used in this study was developed following a factor analysis of Hill's model and the selection of twenty of the original twenty-eight constructs. These constructs were used because they seemed to have implications for vocational development in marketing education.

The Educational Style Preference inventory was assessed with a five-point scale that was seen as a continuous distribution. Five meant "usually" and one represents "rarely." Students marked scales based on personal preference for the items.

Students also completed a Group Embedded Figures Test (GEFT) which is an acceptable measure of field-dependence cognitive style. It has high reliability and validity (Witkin, Oltman, Raskin, & Karp, 1971). Scoring ranged from zero to eighteen, and thus reflects a continuous data distribution. Then, from the scores for the total sample, those on the lowest 27% of the distribution were selected to represent a field-dependent cognitive style while the upper 27% was a field-independent cognitive style. This procedure was suggested by Flannigan (1939) to maximize group differences.

Findings

Question 1: Are there statistically significant differences in Group Embedded Figures Test scores based on extreme GEFT group membership and sex?

Table 1 shows that a statistically significant difference was found based on group membership. The mean for the field-dependent group is low on the 0 to 18 range for the GEFT.

Table 1

t Test: Differences Based on Extreme GEFT Group Membership

Group	Mean	N F	N M	St. Dev.	T Value	df	2-Tail Prob.
Field-Dependent	1.0645	20	11	0.854	45.33	59.08	0.000*
Field-Independent	14.5526	10	27	1.572			

Additional differences were found on the basis of sex for the extreme groups and the total sample. Table 2 shows these results.

Table 2

t Tests: Sex X GEFT Score

Group	Mean	N	St. Dev.	T Value	df	2-Tail Prob.
Extreme Scores:						
Females	5.4000	30	6.279	3.73	66	0.000*
Males	11.1316	38	6.300			
Total Sample:						
Females	5.8780	82	4.264	4.59	142	0.000*
Males	9.6129	62	5.493			

* p> .001

Question 2: Are there statistically significant differences in Symbolic Orientation sub-test mean scores based on Group Embedded Figures Test extreme group membership?

The t-Tests reported on Table 3 show statistically significant differences in mean scores for the field-dependent and field-independent student groups on preferences for "reading numbers." The field-dependent group mean score was higher.

On these five-point scales, the field-dependent group mean suggests a greater preference for having numerical information presented in a visual format. The field-independent group mean is statistically lower.

Table 3

t Tests: Cognitive Style Group X Symbolic Orientation Sub-Tests of the "Educational Style Preference Inventory"

Variable	Group FD	Group FI	T Value	df	2-Tail Prob.
Reading Words	3.8548	3.5526	1.43	67	.157
Hearing Words	4.1290	3.9386	0.98	67	.332
Reading Numbers	4.0726	3.6447	2.41	67	.019*
Hearing Numbers	3.0726	3.3750	1.35	67	.180

* p> .025

Question 3: Are there statistically significant differences in Sensory and Cultural Code sub-test mean scores based on Group Embedded Figures Test extreme group membership?

Table 4 shows that a statistically different mean score existed for "positive communication." Students who have a field-dependent cognitive style had a higher mean score that sub-test. The mean for the field-independent group is statistically lower.

Table 4

t Tests: Cognitive Style Group X Cultural Code Sub-Tests of the "Educational Style Preference Inventory"

Variable	Group FD	Group FI	T Value	df	2-Tail Prob.
Touch	3.2016	3.5724	1.72	67	.091
Positive Communication	4.3145	3.8750	2.32	67	.024*
Task Commitment	4.3145	4.0536	1.59	67	.116
Punctuality	4.2258	4.1447	0.47	67	.640
Appearance of Work	3.4516	3.3355	0.55	67	.583
Meet Role Expectations	4.1452	3.7237	2.26	67	.027
Know Personal Limits	3.9677	3.8509	0.68	67	.499
Value Non-Verbal Comm.	4.1398	3.9912	0.88	67	.385
Interest in Motor Skill	3.7177	3.8158	0.45	67	.655

* p> .025

On the five-point scale used for the "Educational Style Preference Inventory," the mean for the field-dependent group indicates a clear preference for and an interest in maintaining positive communications. The mean for the field-independent group is statistically lower.

Question 4: Are there statistically significant differences in Decision Making Style sub-test mean scores based on Group Embedded Figures Test extreme group membership?

Table 5 reveals a statistically significant mean score different between field-dependent and field-independent groups with reference to "input from peers." The field-dependent group had a higher mean score, suggesting a tendency toward greater preference for input from peers on decision making.

Table 5

t Tests: Cognitive Style Group X Cultural Determinant Sub-Tests of the "Educational Style Preference Inventory"

Variable	Group FD	Group FI	T Value	df	2-Tail Prob.
On My Own	3.2919	3.4474	0.27	67	.790
Input from Peers	3.7581	3.1974	2.38	67	.020*
Input from Teachers	3.7903	3.4408	1.84	67	.070

* p> .025

Question 5: Are there statistically significant differences in Reasoning Strategy sub-test mean scores based on Group Embedded Figures Test group membership?

Table 6 shows a statistically significant difference in group mean scores for "know the rules." The field-dependent group mean was higher than the mean for the field-independent group, thus suggesting a higher preference for knowing the rules.

Table 6

t Tests: Cognitive Style Group X Modes of Inference Sub-Tests of the "Educational Style Preference Inventory"

Variable	Group FD	Group FI	T Value	df	2-Tail Prob.
Compare and Contrast	3.7742	3.7829	0.05	67	.963
Know the Rules	4.3629	3.8224	3.11	67	.003*
Several Related Examp.	4.0006	3.8158	0.93	66	.354
Integrate Three Above	3.7742	3.4737	1.86	67	.067

* p> .005

Conclusions

This study related field-dependence to selected conative constructs from the Educational Cognitive Style framework. This was done to determine if field-dependent and field-independent cognitive style attributes related to the volitions and desires ascribed to the educational style variables. At present, little is known about these type of relationships, though the need to examine them is evident (Snow, 1989; Thomas & Englund, 1989; Snow & Farr, 1987). This discussion centers on the statistically significant findings of this study.

The upper 27% of the GEFT scores define the field-independent group and the lower 27% define the field-dependent group. For the entire sample, overall performance was toward the lower end of the distribution ($\underline{M}$ = 7.44 ; SD = 5.169; Range = 1 to 18). So, 68% of the scores fall between 2.28 and 12.60. The disembedding skills of the sample suggest a field-dependent tendency in the sample.

The sub-tests were considered conative measures because they address outlooks and volitions that influence cognitive behavior. Thus, personal preference reflects attitudes, habits, and decision rules that become unconscious or conscious influences on educational behavior.

The sex difference associated with field-dependence theory was evident in these findings (Tables 1 and 2). And as a percent, 64.5% of the field-dependent group was female, while 26.3% of the field-dependent group was female. This sex difference was also found for the sample (Table 2). Performance on the GEFT indicates skill at locating complex figures in an embedded context. Overall, the males were more successful at this task than were females.

The significance of the finding for Symbolic Orientation toward "reading numbers" relates to what is generally known about field-dependence theory. They have limited preferences for cognitive restructuring activity and less toleration for ambiguity in a task -- this is particularly true if the situation is new (Witkin & Goodenough, 1981). They also prefer social information in a learning experience (Witkin, Moore, Goodenough, & Cox, 1977). Thus,

having a visual portrayal of a numerical task may help organize information to reason about it more effectively.

Research shows that the reasoning behavior of the field-dependent style correlates to a chain-link reasoning process, while field-independence corresponds to a hypothesis testing or discovery approach (Witkin, Moore, Goodenough, & Cox, 1977). These different strategies call for disparate approaches to a task. In this case, the need for visual referents may reflect the need to have new information linked to previous instruction, while less need for may reflect a preference to discover relationships independently.

The finding for the Cultural Code titled "Positive Communication" has a long-standing association with field-dependence theory. The field-dependent cognitive style has been referred to as a social style and a preference for interpersonal circumstances (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962; Witkin, Moore, Goodenough & Cox, 1977; Witkin & Goodenough, 1981). Field-dependence also relates to a tendency to shift one's opinion in an argument (Witkin, Moore, Goodenough, & Cox, 1977). These factors would predispose field-dependent learners, and lead them to desire positive interpersonal relationships. As a conative variable, this construct may represent a social volition.

Similarly, the frame of reference associated with field-dependence is externally-oriented. This orientation seems to be reflected in the value attached to the peer-oriented sub-test in the Decision Making component of the framework. In addition, an influence based on age could account for some of this orientation. The field-independent student would, on the other hand, be expected to make personal decisions.

The final statistically significant finding relates to reasoning strategies. The differentiating factor is knowing the rules that apply to a situation. The field-dependent learner could be expected to show this concern, primarily because of the external frame of reference associated with this style. The context is important. If the situation is new to the learner, the

rules provide structure and a means for understanding relationships among variables. On the other hand, field-independence is associated with a preference for developing one's own structure, and therefore a lesser need to have the rules provided by an external source, such as a teacher.

The summary point is that the associations found between field-dependence theory and Educational Cognitive Style can be aligned to what is known through existing research. A discussion of implications from these findings is presented below.

Discussion

The findings from this study have implications for marketing education and provide a partial understanding of the association that exists between the information processing components of cognitive style and the conative elements of the Educational Cognitive Style learning style theory used in this study. Given the status of this type of research (Snow, 1989; Snow & Farr, 1987; Thomas & Englund, 1989), these findings seem to be positive.

Initially, the sex difference associated with field-dependence theory was found in this study. Not only is the field-dependent group mean score low on the range ($\underline{M}$ = 1.06: Range = 1 to 18), the mean for all females in the sample is likewise field-dependent ($\underline{M}$ = 5.88). Because a majority of students in marketing education programs across the nation are female, this finding suggests the need for additional research, but may reveal conative influences and habits that instructors need to take into account.

Cognitive style stabilizes during early adolescence (Witkin & Goodenough, 1981). If the conative aspects, such as the volitions and desires that characterize the field-dependent style, do not reinforce interests toward complex mental activity, teachers may need to use prescriptive approaches in the classroom. Teaching methods, curriculum organization, and the interpersonal experiences of students may require individual attention, particularly if the learning task is new and confusing to the field-dependent student. If, chain-link reasoning is

an "automatic" route to understanding, instructors need to determine the value of the discovery approach, and its vocational importance. Helping students adapt their reasoning behavior could be a gradual process, but one that schools would seem to be responsible for achieving.

These findings show that the field-dependent cognitive style group had a greater preference for positive interpersonal communication, seeking input from social referents, such as peers, and following externally derived rules. They also have a greater interest in a visual number format that may reflect a need for structure, particularly if the content has a non-social emphasis or presents the student with ambiguity.

From a conative viewpoint, these findings reinforce the fact that field-dependence is associated with a desire for structure in the learning environment. This could be important if tasks do not provide a cognitive (information processing) reference point. To find this out, teachers need to question students and/or assess the likely experiences they bring to the learning situation. By considering this, teachers can answer questions about cognitive rigor and avoid confusing the need for structure with the ability to reason about complex tasks.

Bloom (1984) contends that as cognitive skills become more complex, they require a "rather high degree of consciousness" (p. 19) on the part of the learner, meaning an awareness of the procedures to follow to complete a task. This is also true for the transfer of knowledge. Yet, to work in these situations, students must have restructuring interests and aptitudes. The field-dependent student may not demonstrate these characteristics. When faced with a task that does not relate to prior experience, these students need precise rules to learn how to structure the task.

Thus, to move toward greater autonomy, and to master higher-order problems, learners must learn to function independently. Bloom (1984) suggests that guided practice can facilitate this, and that teachers should teach problem solving rules and reinforce proper attitudes toward difficult mental tasks. Positive reinforcement and corrective help are needed to help

students solve confusing tasks. Because field-dependence theory suggests that analytical skills can be learned, field-dependent students must be taught problem solving methods and attitudes which lead to reliance on personal frames of reference.

As suggested, conation, as a volitional construct, seemed to have an influence on the purposes that cause people to strive toward self-selected goals. Attitude toward positive communication, the need for rules, sensory inputs that are used to ascribe meaning to numbers, and the choice of peer input in decision making could emanate from conative influences, or at least be affected by them. And, while the relationships among these variables are difficult to prioritize -- which comes first, second, etc., it makes intuitive sense that progress toward a goal could be affected by the conditions that affect individual effort, reward persistence, and make goal attainment a meaningful personal experience. Witkin and Goodenough (1981) suggest that child-rearing practices play a role in this process.

Consequently, the sex differences found in this study offer insight about relationships between conation and cognitive style. Needs for assistance from an external referent, when they are socially derived and conditioned, suggest that the culture may be unwittingly failing to provide some children with experiences that encourage them to develop the cognitive skills that are in demand in the modern world of work. At the same time, beyond the stage of normal development, the stabilized cognitive patterns that marketing education teachers encounter could mean that restructuring interests and aptitudes are not always present. Thus, questions about program rigor could be raised when the problem may be the way the instructional content is organized.

In conclusion, these findings suggest that information processing characteristics have relationships to conative variables. They offer encouragement to progress toward interactive research designs that address other associations between conative learning style factors and cognitive style characteristics as they influence complex mental activity.

Recommendations

Based on the findings, conclusions, and discussion presented above, the following recommendations are made:

1. Study the level of field-dependence orientation in marketing education across a large sample, and determine the prevalence of the sex difference reported in this study.
2. Develop an experimental design to measure the interactive effect of information processing and conative variables as they relate to cognitive transfer skills.
3. Study student perceptions of conative factors that address field-dependent coping skills used with complex and unfamiliar mental tasks.

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Appendix A
Reliability of Educational Style Sub-Tests

Corrected Reliability of "Educational Style Preference" Sub-Scales

Sub-Scale	N of Items	Cronbach's Alpha
Symbolic Orientation:		
Reading Words	4	.7481
Hearing Words	3	.5162
Reading Numbers	4	.7774
Hearing Numbers	4	.7549
Sensory & Cultural Codes:		
Touch	4	.8481
Positive Communication	4	.7542
Task Commitment	4	.7313
Punctuality	4	.6977
Appearance of Work	4	.6434
Meet Role Expectations	4	.7135
Know Personal Limits	3	.4901
Value Non-Verbal Comm.	3	.6882
Interest in Motor Skills	4	.8223
Decision Making Style:		
On My Own	4	.5598
Input from Peers	4	.7558
Input from Teachers	4	.6233
Thinking Strategies:		
Compare and Contrast	4	.6780
Know the Rules	4	.7760
Several Related Examples	3	.7283
Integrated with Three Above	4	.5466